T-E-Sem V (CBGS) - (I.T.)

Operating System

18/11/14

QP Code : **14836**

(3 Hours) [Total Marks : 80

Note: Q1 is compulsory.

Solve any three questions from remaining five.

Figure from right indicates full marks.

Assume suitable data wherever required.

Q1. Answer any four. (20)

a) Differentiate: Monolithic kernel and Microkernel.
b) Discuss I/O buffering in detail.
c) Explain Semaphore.
d) Write short note on: producer –consumer problem.
e) Compare and contrast: thread and process.

Q2a) What is Deadlock? State necessary conditions for deadlock. (10)

How to prevent deadlock?

Q2b) draw process state transition diagram and explain the following transitions: (10)

i) Running to ready ii) Waiting to ready

iii) Running to waiting iv) Blocked to ready

v) Running to terminated

Q3 a) calculate Hit and Miss using LRU, Optimal, FIFO page replacement policies (10)

for the following sequence. Page frame size is 3.

0, 4, 3 ,2 ,1 ,4, 6, 3, 0, 8, 9, 3, 8, 5.

Q3 b)Explain file allocation methods in detail with proper diagram. (10)

Q4a)Use following scheduling algorithms to calculate ATAT and AWT for (10)

the following processes.

i)FCFS ii)pre-emptive and non pre-emptive SJF iii)preemptive priority .

Process	Arrival Time	Burst Time	Priority
P1	0	8	3
P2	1	1	1
P3	2	3	2
P4	3	2	3
P5	4	6	4

Q4b) What is meant by inter-process communication? (10)

Q5a) Explain paging in detail. Describe how logical address is converted into physical address? (10)

Q5b) (10)

Process	Max				Allocation				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	6	0	1	2	4	0	0	1	3	2	1	1
P1	1	7	5	0	1	1	0	0				
P2	2	3	5	6	1	2	5	4				
P3	1	6	5	3	0	6	3	3				
P4	1	6	5	6	0	2	1	2				

Using Banker's algorithm answer the following questions-

i) How many resources of type A,B, C, D are there?

ii) What are the contents of need matrix?

iii) Find if the system is in safe state? If it is, find the safe sequence.

Q6 Write short notes on: (any four) (10)

a) Characteristics of Modern operating system
b) RAID
c) Android OS
d) Distributed operating system
e) I-node
